

Translation of the pertinent portions of a Notification
Regarding the Forwarding of the International Preliminary
Report in Regard to Patentability, mailed 10/10/2005

2. This REPORT comprises a total of 9 pages, including this cover page.

3. ATTACHMENTS have been attached to this report, these contain

a. X (sent to applicant and the International Office) a total of 9 pages.

4. This report contains information regarding the following items:

- I Basis of the Report
- IV Lack of Unity of the Invention
- V Reasoned Determination under Article 35(2)
- VII Certain Deficiencies of the International Application
- VIII Certain Remarks Regarding the International Application

Field No. I Basis of the Report

1. Regarding the **language** the report is based on the International Application in the language in which it was filed, if nothing different has been noted under this point.

2. Regarding the **contents** of the International Application, this report is based on

Specification, pages

1 to 22 in the originally filed version.

Claims, nos.

1 to 42 filed with the application

Drawings, sheets

1/5 - 5/5 in the originally filed version.

Field IV Lack of Unity of the Invention

2. The Office has determined that the requirement of unity of the invention has not been met and has decided in

accordance with Rule 66.1 not to request Applicant to restrict the claims or to pay additional fees.

3. The Office is of the opinion that the requirement of unity of the invention under Rules 13.1, 13.2 and 13.3

x was not met for the following reasons:

see the attached sheet

4. Therefore this report was prepared for

x all parts of the international application.

Field V Reasoned Determination under Article 35(2)

1. Determination

Novelty Yes: Claims 1 to 42
No: Claims

Commercial Applicability Yes: Claims 1 to 42
No: Claims

2. References and Explanations (Rule 70.7):

see the attached sheet

Field VII Certain Deficiencies of the International Application

It has been determined that the international application contains the following deficiencies in regard to form or contents:

see the attached sheet

Field VIII Certain Remarks Regarding the International Application

see the attached sheet

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

ATTACHED SHEET

Re.: Item I

The changes filed with the communication of 04/27/2005 introduce matter which exceeds the disclosure of the original application at the time of filing in contradiction of Article 34(2) (b) PCT. These are the following changes:

Present claim 4 consists of original claims 4 and 6, wherein present claim 5 depends from claim 4.

Accordingly, now the combination of the exemplary embodiments of original claims 5 and 6 is claimed, while in the original disclosure the embodiments of claims 5 and 6 are separate from each other and no information regarding their combination is provided.

Said combination is excluded in these comments.

Re.: Item IV

This Office has determined that the international application contains several inventions or groups of inventions, which are not connected by a single common inventive idea (Rule 13.1 PCT), namely

I: Claim 1: Scanning width of a sensor of one-quarter the web width for affecting the fan-out effect

II: Claim 2: Affecting the lateral registration and the fan-out effect by means of common characteristics

The reasons for this are as follows:

The common idea connecting independent claim 1 with independent claim 2 substantially consists of a method for affecting the fan-out effect, wherein the measured values of a sensor are used for affecting the fan-out effect.

However, this idea is not novel (see document EP-A- 1 048 460, paragraphs [0079] and 90080]. As a result, there is no technical connection between claim 1 and claim 2 within the meaning of Rule 13(2) PCT, so that unity in accordance with Rule 13(1) PCT has not been provided.

The remaining independent claims appear to provide unity among each other.

Re.: Item V

1. The closest prior art in respect to the subject of claim 1 the publication D2, which discloses a method for affecting the fan-out effect, wherein the image from a sensor (5) in the form of a CCD camera, which detects markers on a web wherein, in case of a deviation from a preset nominal value, an actuation command is transmitted to an actuating element for affecting the fan-out effect.

The subject of claim 1 differs from D2 in that

- the sensor detects the printed image over a scanning width of at least a quarter of the web width, wherein
 - for detecting the fan-out, image points of two printed image sections of a defined color are compared in respect to their axial position in respect to a reference position, in particular a relative reference position, of the image points of the two printed image portions, wherein
 - the position of defined image points or image areas of the color separation of this color from image data of the printing pre-stage is employed as the reference position.

Therefore the subject of claim 1 is novel.

It appears that a reduction of the technical outlay for devices is possible by means of the combination of these characteristics.

Although publication EP-A-1 300 243 cited by Applicant refers to data from the print pre-stage for generating nominal values for comparison purposes, it only refers to this in connection with the control of the longitudinal registration.

Therefore one skilled in the art, starting from D2, would have needed several non-obvious steps for arriving at the subject of claim 1.

Neither D2, nor one of the remaining publications, nor a direct combination of their teachings, were able to suggest claim 1 in the characteristics constellation for this intended purpose.

Therefore claim 1 is based on inventive activities and, together with the further developments of dependent claims 7, 11, 12, 38 to 42, meets the requirements of Article 33(1) to (4) PCT.

2. The closest prior art regarding the subject of claims 2, 4 and 29 is D1 (see page 5, last paragraph to page 6, second paragraph, claims 9 and 10, Figs. 1, 5, 6), from which a method for affecting the fan-out effect by means of a device for affecting the fan-out effect [ensues], wherein a sensor arrangement (58 to 51) of a lateral registration control/regulation device (63), portions of a lateral registration control/regulation device (63), and measured values (a1 to a4) of a lateral registration control/regulation device (63) are employed for triggering a device (11, 12, 67) for affecting the fan-out effect.

2.1 The subject of claim 2 differs from D1 in that a correction of the lateral registration is made by means of a lateral registration control/regulation device via an actuating means, if the printed image as a whole deviates from its nominal position in a lateral direction, a correction by means of the device for affecting the fan-out effect is performed when the evaluation has a result that, although the nominal position has been assumed, a distortion or widening of the printed image exists.

Therefore the subject of claim 2 is novel.

The mentioned discriminating regulating method does not ensue from any of the remaining documents, so that a method in accordance with claim 2 for producing an economical regulation architecture is not obviously suggested by the prior art.

Therefore claim 2 is based on inventive activities and, together with the claims depending from it, meets the requirements of Article 33(1) to (3) PCT.

2.2 The subject of claims 4 and 29, which correspond to each other, differs from D1 in that, for detecting the fan-out effect, the image from a sensor is employed, which detects the printed image over a scanning width of at least one quarter of the web width.

Therefore the subject of claims 4 and 29 is novel.

In comparison with D1 a reduction of the technical layout for devices is made possible by this.

Although sensors for detecting the entire web width are known in the prior art, a replacement of the different sensors required in D1 does not seem to be possible without further adaptations, so that here, too, a combination did not appear to be obvious.

Obviously claims 4 and 29 are based on inventive activities and, together with the claims depending from them, meet the requirements of Article 33(1) to (4) PCT.

Re.: Item VII

Publication DE 195 01 373 U1 mentioned on page 1 of the application could not be located. However, it appears to agree more with publication D1.

Re.: Item VIII

The application does not meet the requirements of Article 6 PCT, because claim 1 is not clear.

It follows from the specification, page 2, paragraphs 3 and 4, and from pages 11 to 18 (in particular page 15, paragraph 3 to page 16, paragraph 1) that the main idea of the present invention rests in utilizing identical measuring means and/or control devices for correcting errors in lateral registration and fan-out in order to reduce the outlay in this way.

Accordingly, the characteristics expressed in claims 2 or 4, or 29, are essential for defining the invention.

Since independent claim 1 does not contain this characteristic, it does not meet the requirements of Article 6 PCT, together with Rule 6.3 b) PCT that every independent claim must contain all technical characteristics which are essential for defining the invention.

If depending from claim 1, claim 22 is contradictory.

Claims

1. A method for affecting the fan-out effect wherein, for affecting the fan-out effect, initially the image from a sensor (341) is evaluated, which detects the printed image over a scanning width (b341) of at least one-quarter of the web width (b, b') and, in case of a deviation from a preset nominal value, an actuating command is transmitted to an actuating member (338) for affecting the fan-out effect, wherein for detecting the fan-out, image points of two printed image portions of a color separation of a defined color are compared in respect to their axial position with a reference position, in particular a relative reference position, of the image points of the two printed image portions, wherein the position of defined image points, or image areas of the color separation of this color from image data of the print pre-stage is used as the reference position.

2. A method for affecting the fan-out effect by means of a device for affecting the fan-out effect, wherein a sensor arrangement of a lateral registration control/regulation device (342), parts of a lateral registration control/regulation device (342), and/or measured values from a lateral registration control/regulation device (342) are used for triggering a device for affecting the fan-

out effect, wherein a correction of the lateral registration is made by means of the lateral registration/regulation device (342) via an actuating means (343), if the printed image as a whole differs from its nominal position in a lateral direction, a correction by means of the device (336) for affecting the fan-out effect is performed, if the evaluation provides the result that, although the nominal position has been assumed, a distortion or widening of the printed image exists.

3. The method in accordance with claim 2, characterized in that a measured value from the same sensor (341) which records a marker and/or a printed image and or a

partial printed image is supplied to a control device (339) of the device (336) for affecting the fan-out effect, as well as to the lateral registration control/regulation device (342).

4. A method for affecting the fan-out effect by means of a device (336) for affecting the fan-out effect, and for affecting the lateral registration by means of a lateral registration control/regulation device (342), wherein the device (336) for affecting the fan-out effect and the lateral registration control/regulation device (342) make use of a measured value from the same sensor (341) wherein, for detecting the fan-out effect, the image from a sensor (341) is evaluated, which detects the printed image over a scanning width (b341) of at least one-quarter of the web width (b, b').

5. The method in accordance with claim 2 or 4, characterized in that, for detecting the fan-out effect, the measured values from two sensors (341) arranged side-by-side are used, each of which detects in its respective field of view a printed image portion or a marker imprinted on the web (B, B').

6. The method in accordance with claim 2, characterized in that, for detecting the fan-out effect, the image from a sensor (341) is evaluated, which detects the

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printed image over a scanning width (b341) of at least one-quarter of the web width (b, b') .

7. The method in accordance with claim 1, 5 or 6, characterized in that, for detecting the fan-out, two imprinted markers of a color separation of a defined color are compared in respect to their axial position with a reference position of the two markers.

8. The method in accordance with claim 5 or 6, characterized in that, for detecting the fan-out, image points of two printed image portions of a color separation of a defined color are compared in respect to their axial position with a reference position, in particular a relative reference position, of the image points of the two printed image portions.

9. The method in accordance with claim 5 or 6, characterized in that, for detecting the lateral registration, the marker of a color separation of a defined color is compared in respect to its axial position with a reference position of the marker.

10. The method in accordance with claim 5 or 6, characterized in that, for detecting the lateral registration, an image point of the printed image portion of the color separation of a defined color is compared in respect to its axial position with a reference position of the image point of the printed image portion.

11. The method in accordance with claim 7 or 9, characterized in that the position of a color or together with a color separation of a color which is different from the first mentioned color is used as the reference position.

12. The method in accordance with claim 11, characterized in that the position of markers which had been imprinted by a printing group (301) through which passage had first occurred is used as the reference position.

13. The method in accordance with claim 8 or 10, characterized in that the position of defined image points, or image areas, of the color separation of this color on a previously prepared color print-out is used as the reference position.

14. The method in accordance with claim 10,

characterized in that the position of defined image points, or image areas of the color separation of this color from image data of the print pre-stage is used as the reference position.

15. The method in accordance with claim 5, characterized in that the measured value from one of the two sensors (341), in particular from a sensor (341) which is substantially arranged in the area of the web center (M), is used for lateral registration control/regulation (342).

16. The method in accordance with claim 5, characterized in that one of the two measured values, in particular a measured value obtained in the area of the web center (M), is evaluated in respect to a nominal position of the color separation, and the two measured values are evaluated in respect to a distortion or widening of the printed image in comparison with a preset nominal value.

17. The method in accordance with claim 6, characterized in that the recorded color separation, or the recorded color separation portion, is evaluated in respect to an offset of the nominal position in comparison with a reference of this color separation, and individual image points, or image areas, are evaluated in respect to a distortion or widening of the printed image in comparison

with a preset nominal value.

18. The method in accordance with claim 1, 6 or 17, characterized in that, for determining the fan-out, several individual image points, or image areas, of the recorded printed image are evaluated in relation to their lateral spacing from each other in respect to a distortion or widening of the printed image in comparison with a preset nominal value or reference.

19. The method in accordance with claim 18, characterized in that in the course of this the same absolute

value of a lateral offset, caused by an lateral registration error, of the respective image point, or image area, is subtracted.

20. The method in accordance with claim 19, characterized in that, if a scanning width (b341) which includes the web center is provided, the amount of lateral offset representing the lateral registration error is detected by the deviation of the image point, or image area, from the nominal position in the area of the web center (M) .

21. The method in accordance with claim 19, characterized in that the amount representing the lateral registration error is determined by extrapolating several lateral deviations, measured outside of the web center, of the image points, or image area, from their nominal position regarding an expected deviation from their nominal position in the area of the web center (M) .

22. The method in accordance with one or several of the preceding claims, characterized in that image data measured as nominal allowance, nominal value allowance, or nominal position, of a reference printout are used.

23. The method in accordance with one or several of the preceding claims, characterized in that image data from the printing pre-stage are used as nominal allowance, nominal

value allowance, or nominal position.

24. The method in accordance with claim 4, characterized in that a correction of the lateral registration is made by means of the lateral registration/regulation device (342) via an actuating means (343), if the printed image as a whole differs from its nominal position in a lateral direction, a correction by means of the device (336) for affecting the fan-out effect is performed, if the evaluation provides the result that, although the nominal position has been assumed, a distortion or widening of the printed image exists.

25. The method in accordance with claim 2 or 4, characterized in that the evaluation and determination of the correction of the lateral registration and of the fan-out takes place by means of a common, or at least coupled, control algorithm.

26. The method in accordance with claim 2, 4, 19 or 24, characterized in that in case of a deviation of the lateral registration, as well as the fan-out, from the respective preset nominal values, the determination of the two corrections is provided cyclically.

27. The method in accordance with claim 26, characterized in that the deviation of the lateral registration is determined in a first step, and thereafter the distance change between the measuring or image points because of the fan-out.

28. The method in accordance with claim 2 or 4, characterized in that in case of a deviation of the lateral registration, as well as the fan-out, the determination of the two corrections is performed by means of a common calculation algorithm by means of the at least two measured values, or image points.

29. A device (336) for affecting the fan-out effect, with a control device (339) and actuating means (338), and

for affecting the lateral registration by means of a lateral register control/regulation device (342), characterized in that a common sensor (341), which detects a printed image over the entire web width (b, b'), a printed image portion, or a printed-on marker, is assigned to the device (336) for affecting the fan-out effect and to the lateral register control/regulation device (342), wherein an image sensor (341) which detects the printed image over a significant scanning width (b341) of at least one-quarter of the web width (b, b'), is designed as the sensor (341).

30. The device in accordance with claim 29, characterized in that two sensors (341), arranged side-by-side in the axial direction, are assigned to the device (336) for affecting the fan-out effect, both of which are in a signal connection with a control (339) for affecting the lateral registration, and at least one is in a signal connection with the lateral registration control/regulation device (342).

31. The device in accordance with claim 29, characterized in that the sensor (341), or an evaluation unit evaluating the image material of the sensor (341), is in a signal connection with a control device (339) for affecting the lateral registration, as well as with the lateral registration control/regulation device (342).

32. The device in accordance with claim 30 or 31, characterized in that the control device (339) for affecting the lateral registration, and the lateral registration control/regulation device (342) are designed as hardware units, which are structurally separated from each other.

33. The device in accordance with claim 30 or 31, characterized in that the control device (339) for affecting the lateral registration, and the lateral registration control/regulation device (342) are designed as two calculation algorithms, which are different from, but are

coupled with, each other.

34. The device in accordance with claim 30 or 31, characterized in that the control device (339) for affecting the lateral registration, and the lateral registration control/regulation device (342) are designed as sequentially running program modules of a common calculation algorithm.

35. The device in accordance with claim 29, characterized in that the actuating means (338) is embodied

as a roller, which can be selectively brought into the plane of the running web (B, B').

36. The device in accordance with claim 29, characterized in that the actuating means (338) is embodied as a nozzle (338) for the exit of compressed air, wherein the force of the air flow and/or a distance of the support element (338) from the web (B, B') can be set by the control device (339).

37. The device in accordance with claim 29, characterized in that the actuating means (338) is designed as a support element (338) through which air flows, whose surface has micro-openings for forming an air cushion, wherein a distance of the support element (338) from the web (B, B') can be set by the control device (339).

38. The method in accordance with claim 1, 2 or 4, or the device in accordance with claim 29, characterized in that an image sensor (341) is embodied as the sensor (341) which detects the printed image over a significant scanning width (b341) of at least half a web width (b, b').

39. The method in accordance with claim 1, 2 or 4, or the device in accordance with claim 29, characterized in that an image sensor (341) is embodied as the sensor (341) which detects the printed image over a significant scanning width

(b341) of at least a whole web width (b, b').

40. The method in accordance with claim 1, 2 or 4, or the device in accordance with claim 29, characterized in that the sensor (341) is designed as a line camera.

41. The method in accordance with claim 1, 2 or 4, or the device in accordance with claim 29, characterized in that the sensor (341) is designed as a planar sensor (341), in particular as a camera.

42. The method in accordance with claim 6, or the device in accordance with claim 30, characterized in that the two axially spaced-apart sensors (341) are respectively designed as CCD chips, or have a CCD chip.